

REMARKS

Claims 1, 2 and 4 through 16 and 20 through 54 are presently pending herein. Claims 1, 20, 29, 36, 40, 51 and 54 are presented in independent form.

Claims 1, 2, 4 to 13, 17 to 25, 29, 30, 34, 36 to 43 and 47 to 50 have been rejected under 35 U.S.C. § 102 (e) as allegedly being anticipated by U.S. Patent No. 6,718,141 (hereinafter “DeVette”). Further, Claims 14 to 16, 26 to 28, 31 to 33 and 44 to 46 have been rejected under 35 U.S.C. § 103 as allegedly being obvious in view of DeVette. Claims 51 to 54 have been rejected as being unpatentable over DeVette in view of Elliot (U.S. Patent No. 6,456,599). Applicant respectfully traverses these grounds of rejection and request reconsideration of the outstanding rejection. The legal standards for anticipation and obviousness have been set forth in the prior response and are incorporated herein by reference.

Applicant respectfully submits that DeVette does not anticipate nor render obvious a single claim of the subject patent application as the necessary teaching, suggestion or motivation to modify DeVette to achieve the claimed invention is lacking. Rather, the Examiner’s rejections can only be made through the use of impermissible hindsight reconstruction. Applicants’ invention, as recited in Claim 1, is directed to a method to determine configuration information associated with *an optical network having a plurality of optical nodes* coupled by optical fiber spans. The method comprises the steps of: (i) discovering at least one neighboring optical node, each neighboring optical node being coupled by a single optical span having at least one optical fiber; (ii) each node publishing at least one neighboring node to the network; and (iii) *each node of the plurality of optical nodes determining a network configuration having a topological map of network links corresponding to the discovered neighboring optical nodes.*

DeVette does not teach or suggest the step of **each node** of a plurality of optical nodes determining a network configuration having a topological map of network links corresponding to the discovered neighboring nodes. On page two of the Official Action dated March 24, 2006, the Examiner alleges that DeVette teaches that "each node of said plurality of optical nodes determining a network configuration having a topological map of network links corresponding to the discovered neighboring optical nodes" (col. 2, lines 44-49; col. 22, lines 42-54 and Table 1 in col. 14). However, the cited passages in DeVette (i.e., col. 2, lines 44-49; col. 22, lines 42-54 and Table 1 in col. 14) do not support the Examiner's assertion. These portions of the specification of DeVette teach away from the claimed invention. For example, at col. 2 lines 43-54 states;

"Each node connectivity report 610 generated by a node 230 reflects only what topology and connectivity data has been reported to it by upstream nodes 293, 294. While, as has been shown, certain error conditions may be detected using this information, the possibility that the data reported by one or more upstream nodes 293, 294 has been corrupted by a fault in a segment 125-145 or a node 101-122, while expected to be rare , cannot be discounted. Such an event would not necessarily be detected, but would result in corruption of downstream node connectivity messages 610. *This would cascade to subsequent nodes and the connectivity messages would become completely unbelievable.*" (emphasis added)

In fact, DeVette expressly states that the mapping processor is located in CNM 123. (See DeVette, col. 13, lines 55 to 60) Contrary to the examiner's assertion, CNM 123 not part of a node but is the Central Network Monitor. The portion of the specification (col. 11, lines 21-22) does not

indicate that the CNM is part of the node, only that a connection exists. This connection would be for example, an optical fiber (communication link 124). DeVette fails to teach expressly or inherently a method including the step of each of a plurality of optical nodes determining a network configuration having a topological map of network links corresponding to the discovered neighboring nodes. Accordingly, DeVette cannot possibly anticipate Claim 1 and, therefore, the rejection on this grounds should be withdrawn. Claims 2 and 4 through 16 depend from Claim 1 and, therefore, are allowable for at least the reasons that Claim 1 is patentable.

Applicants' invention, as recited in Claim 20, is directed to a method to determine a configuration error in an optical network having a plurality of optical nodes coupled by optical fiber spans. The method comprises the steps of: (i) discovering at least one pair of neighboring optical nodes, each pair of neighboring optical nodes being coupled by a single optical span having at least one optical fiber; (ii) determining a network configuration having a topological map of network links corresponding to the discovered neighboring optical nodes; and (iii) generating an alarm signal indicative of a network configuration error responsive to detecting an error between the network configuration and a planned configuration.

DeVette fails to teach or suggest, inter alia, the step of generating an alarm signal indicative of a network configuration error responsive to detecting *an error between the network configuration and a planned configuration*. The Examiner cites to col. 28, lines 25 to 27 of DeVette in connection with this step. The cited passage is a portion of Claim 23 that reads as follows:

the at least one node transmitting an alarm message to denote
an inconsistency between the *identification data* and the *configuration
information*. (emphasis added)

The identification data is merely information obtained from the in-band signal about the

source of the payload signal and the WDM carrier wavelength that is modulated by the payload signal. (See DeVette, col. 23, lines 57 to 61) As such, the identification data does not satisfy either the *network configuration having a topological map of network links corresponding to the discovered neighboring optical nodes* or the *planned configuration*. The office action further cites col. 20, lines 54-67 and col. 22, lines 55-65 to support the rejection. Neither of these portions of the specification of DeVette anticipate or render obvious the step of "generating an alarm signal indicative of a network configuration error responsive to detecting *an error between the network configuration and a planned configuration*" and further do not satisfy either the *network configuration having a topological map of network links corresponding to the discovered neighboring optical nodes* or the *planned configuration*. Claim 17 has been incorporated into claim 20 along with intervening claims 18 and 19. Claim 20 further requires that "each node forming an information model of the optical network; and each node determining a network configuration having an arrangement of neighboring nodes consistent with the information model of the node." The office action identifies col. 2 lines 55-56 of DeVette to support the rejection of claim 20. The configuration data referred to in lines 55-56 does not provide a teaching that the configuration data is "an information model of the optical network" or that "each node determining a network configuration having an arrangement of neighboring nodes consistent with the information model of the node". Accordingly, Claim 20 is not anticipated by DeVette.

Claims 21 to 28 depend from Claim 20 and, therefore, are allowable for at least the reasons that Claim 20 is patentable.

Applicants' invention, as recited in Claim 29, is directed to a method to determine

configuration information associated with an optical network having a plurality of optical nodes coupled by optical fiber spans. The method comprises the steps of: (i) exchanging identification messages between neighboring nodes, each identification message including a source node identifier and node configuration data; (ii) *for each node, publishing the identity of the node, the identity of its neighbors*, and the node configuration data associated with the node; and (iii) determining a network configuration consistent with the published node information.

DeVette fails to teach or suggest Applicants' invention including the step of for each node publishing the identity of its neighbors (i.e., more than one neighbor node). The Examiner's reliance on DeVette at col. 14, lines 16-28 is misplaced. Specifically, col. 14, lines 16-28 do not disclose the step of for each node publishing the identity of its neighbors (i.e., more than one neighbor node). In fact, this passage never refers to neighbor nodes at all. For this reason alone, DeVette cannot anticipate Claim 29.

Claims 30 to 35 depend from Claim 29 and, therefore, are allowable for at least the reasons that Claim 29 is allowable.

Applicants' invention, as recited in Claim 36, is directed to an optical node for a optical network. The optical node comprises an optical transport complex for adding, dropping, and passing through optical channels; an administrative complex for administering the optical transport complex and having a memory adapted to receive provisioning data for the optical transport complex; an inter-node communication module coupled to the administrative complex for communicating with neighboring nodes on an inter-node data channel and publishing data to the optical network; and a configuration discovery module exchanging node identification and configuration data with other nodes to determine the network configuration.

Claim 36 describes the structure of a single optical node of an optical network. Accordingly, to anticipate Claim 36 DeVette must disclose expressly or inherently a single node that has the identical features set forth in Claim 36. As is readily evident from the Examiner citations to DeVette, the Examiner is merely identifying various aspects of the optical network rather than structure identical to that set forth in Claim 36 that is contained in a single node disclosed by DeVette. The Examiner cannot identify a single node having all of the features of Claim 36 in DeVette as DeVette fails to disclose expressly or inherently any such node. As previously discussed the examiner's assertion, CNM 123 not part of a node but is the Central Network Monitor. The portion of the specification (col. 11, lines 21-22) does not indicate that the CNM is part of the node, only that a connection exists. This connection would be for example, an optical fiber (communication link 124). For these reasons, the rejection of Claim 36 based on DeVette must be withdrawn.

Claims 37 to 39 depend from Claim 36 and, therefore, are allowable for at least the reasons that Claim 36 is allowable.

Applicants' invention, as recited in Claim 40 is directed to an optical network including a plurality of optical nodes, each node having at least one neighbor node which is coupled to it by an optical span. Each node has an inter-node communication module to communicate with the other nodes of the network. *Each node is configured to identify itself to its neighbors and to publish the identity of its neighbors to the optical network.* At least one of the nodes is configured to form a model of the network configuration from published neighbor information.

As explained in connection with Claim 29, DeVette does not disclose an optical network

having a plurality of optical nodes with each node configured to identify itself to its neighbors (i.e., more than one neighbor) and to publish the identity of its neighbors (i.e., more than one neighbor) to the optical network. The passage in Devette at col. 19, lines 30 to 40 relied upon by the Examiner merely refers to figure 6B. As previously explained, this figure at most identifies a single neighbor represented by reference numeral 613 to a node represented by reference numeral 612. For this reason alone, Devette cannot possibly anticipate Claim 40. Further, DeVette fails to disclose expressly or inherently at least one of the nodes being configured to form a model of the network configuration from the published neighbor information. The Examiner's reliance on the mapping processor referred to at col. 4, lines 45 to 55 is misplaced as this processor is located in the central network monitor not the nodes forming the optical network. Accordingly, Claim 40 patentably defines over DeVette.

Applicants' invention, as recited in Claim 51, is directed to an optical network, comprising a plurality of optical nodes coupled by optical spans, each node including an internode communications capability to communicate messages with neighboring nodes. The optical network also includes *neighbor discovery means for transmitting identification messages in opposite directions to one of the plurality of nodes to identify at least two neighboring nodes to the one of the plurality of nodes* and configuration analysis means for determining a configuration of the optical network having a topology map corresponding to a relationship between neighboring nodes. The optical network further includes alarm means for generating an alarm signal indicative of a configuration error.

Figure 1B of the subject patent application illustrates one of many possible arrangements in which identification messages are transmitted in opposite directions to one of a

plurality of nodes (e.g., node 1 in figure 1B) to identify at least two neighboring nodes (e.g., nodes 2 and 4). As is readily evident from Figure 1 of DeVette and the passage at col. 22, lines 39 to 45, signals concerning network configuration travel in only one direction, i.e., downstream. On this point, DeVette clearly states that “[e]ach node connectivity report 610 generated by a node 230 reflects only what topology and connectivity data has been reported to it by the upstream nodes 293, 294.” (See DeVette, col. 22, lines 42 to 45)

The patent of Elliot has been cited for the proposition that it teaches neighbor discovery means and transmits signals in opposite directions to discover neighboring nodes. (office action, page 11) There is no basis for the combination of DeVette and Elliot. While the examiner notes that DeVette recognizes that bidirectional communications may have applicability to long haul networks, DeVette fails to teach any application of data collection relevant to a bidirectional system, but only to a unidirectional system and further as referenced above with respect to claim 1, portions of the specification of DeVette teach away from the claimed invention. For example, at col. 2, lines 43-54 states;

"Each node connectivity report 610 generated by a node 230 reflects only what topology and connectivity data has been reported to it by upstream nodes 293, 294. While, as has been shown, certain error conditions may be detected using this information, the possibility that the data reported by one or more upstream nodes 293, 294 has been corrupted by a fault in a segment 125-145 or a node 101-122, while expected to be rare, cannot be discounted. Such an event would not necessarily be detected, but would result in corruption of downstream node

connectivity messages 610. *This would cascade to subsequent nodes and the connectivity messages would become completely unbelievable.*" (emphasis added)

Consequently, there is no basis to assert that it would be obvious to combine DeVette with Elliot to achieve the invention of Claim 51.

Claims 52 and 53 depend from Claim 51 and, therefore, are allowable for at least the reasons that Claim 51 is patentable.

As to Claim 54, the patents of DeVette and Elliot cannot be combined for the same reasons as set forth with respect to claim 51, and further, the combination of DeVette and Elliot does not teach *inter alia* the step in claim 54 of "determining a network configuration having a topological map of network links corresponding to nodal relationship information obtained in said discovering step." Applicant respectfully requests that the rejections of the foregoing claims be withdrawn for the reasons stated.

Applicants respectfully submit that the subject patent application is in condition for allowance. It is believed that no additional fees are due. However, should that determination be incorrect, the Commissioner is hereby authorized to charge any deficiencies to Deposit Account No. 50-0562 and notify the undersigned in due course.

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Respectfully submitted,



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